



MITSUBISHI MOTORS AUSTRALIA LIMITED

ABN 53 007 870 395

Head Office

1284 South Road Clovelly Park, S.A. 5042

PO Box 8, Melrose Park South Australia 5039

Ph: +61 1300 13 12 11 Fax: +61 1300 55 33 19

MINISTERIAL FORUM ON VEHICLE EMISSIONS  
Improving the efficiency of new light vehicles  
Draft Regulatory Impact Statement

**Submission Cover Sheet**

Company/Organisation:

Mitsubishi Motors Australia Ltd

Name:

A. C. Sanders

Position:

Manager, Certification and Regulation Compliance Dept,  
Product and Market Strategy



**MITSUBISHI MOTORS AUSTRALIA LIMITED**

ABN 53 007 870 395

**Head Office**

1284 South Road Clovelly Park, S.A. 5042

PO Box 8, Melrose Park South Australia 5039

Ph: +61 1300 13 12 11 Fax: +61 1300 55 33 19

## **Comment to Improving the efficiency of new light vehicles Draft Regulatory Impact Statement , December 2016**

---

### **Background**

---

Mitsubishi Motors Australia Ltd (MMAL) is a wholly owned subsidiary of Mitsubishi Motors Corporation (MMC), Japan. MMAL is the importer and distributor of motor vehicles built by Mitsubishi Motors group companies in Japan and Thailand.

MMAL is a member of the Federal Chamber of Automotive Industries (FCAI), the peak industry body representing vehicle manufacturers and importers of passenger cars and light commercial vehicles, and motorcycles in Australia. MMAL's parent company, MMC is a member of the Japanese Auto Manufacturers Association (JAMA), the equivalent representative body in Japan.

MMAL welcomes the opportunity to respond to the Commonwealth Government's "Improving the efficiency of new light vehicles" draft Regulatory Impact Statement (RIS). In response to a call for public comment on this RIS, the FCAI has prepared a submission which MMAL fully supports and endorses. This MMAL submission represents our additional and supplementary comment to the FCAI submission. This submission is specific to the "Improving the efficiency of new light vehicles" RIS. Questions arising from the "Vehicle Emissions Standards for Cleaner Air" RIS and "Better Fuels for Cleaner Air" discussion paper will be addressed in separate submissions to those RIS.

Australia is one of the most open and competitive automotive markets in the world with more than 60 brands and 350 models from 20 source countries. The market exceeded 1.1 million units in 2016 and are expected to remain similar in 2017. However, these volumes represent less than 1.5% of the global market. Over 90% of new vehicles sold in Australia are designed, developed, homologated and manufactured overseas. This proportion will increase further during 2017 when the remaining local manufacturing will cease.

MMAL sales volume in 2016 was approximately 6.4% of the total Australian market.

---

### **Key Points - Recommendations**

---

- Vehicle efficiency, vehicle emissions and fuel quality standards are inextricably linked and cannot be considered in isolation.
- Automotive development and sales cycles do not operate in the short term and this should be considered in any vehicle efficiency policy and strategy.
- Fuel efficiency standards are, of their very nature, highly complex and difficult instruments for regulators to develop and implement. In the absence of regulation in Australia, suppliers to the Australian market who have extensive experience in vehicle efficiency regulation overseas, have already made significant improvement to the efficiency of the new vehicle fleet using various strategies and technologies
- Government should take the technologies already deployed in the market place and the proven CO<sub>2</sub> reduction potential of new technologies into consideration when designing vehicle efficiency standards and setting targets for those standards.
- Government should design vehicle efficiency standards to include complementary measures which encourage and/or incentivize the Australian consumer to increase their uptake of lower emission variants which could be offered by manufacturers.
- Electric vehicles represent the most efficient form of light vehicle in terms of run time CO<sub>2</sub> emissions currently available globally and could be deployed into the Australian market relatively quickly and easily. However, electric vehicles are also expensive to develop and manufacture and have a significantly lower uptake compared with vehicles utilising conventional powertrains that are offered to the Australian market. Government should actively promote strategies for increasing the uptake of Electric Vehicles in the Australian market taking note of those strategies which have been successfully adopted overseas. This will lead to improved environmental outcomes and achieve the health benefits flowing from those outcomes.

In addition to vehicle based strategies, government policy should include

- Investment in improved infrastructure, driver education and Intelligent Transport Systems to improve traffic flow and reduce traffic congestion.

---

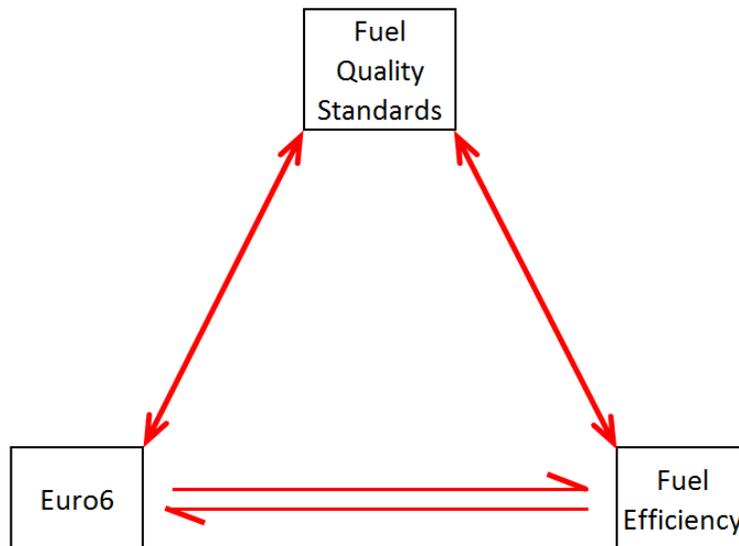
### **Mitsubishi Motors Australia Ltd's Comment**

---

Information and recommendations relating to which were included in MMAL's submission to the Vehicle Fuel Efficiency Reviews in 2008 and 2011 and to the Vehicle Emissions Forum discussion paper of 2016 remain equally valid today as they were at the time of those submissions.

Further to the recommendations included in FCAI's submission to this RIS, MMAL suggests that

- Government should first set fuel quality standards which are consistent with the emissions standards under consideration as it has been proven globally that this is essential for vehicle emissions systems effectiveness, efficiency and durability. Only then should Government consider vehicle emission (pollutant) standards (i.e. ADR 79/05 or Euro 6) and vehicle efficiency (CO<sub>2</sub>) standards concurrently as they are interrelated and co-dependent. Mandating either in isolation or prior to setting fuel quality standards may result in inefficient or ineffective achievement of the Government's vehicle emissions forum's objectives.



---

## **Fuel Efficiency (CO<sub>2</sub>) Standards, design and implementation**

---

Fuel efficiency standards are, of their very nature, highly complex and difficult instruments for regulators to develop and implement. Once implemented, they impose significant additional complexity to vehicle manufacturers' long term strategic and product plans and impose significant burden upon administrative, manufacturing and development resourcing and investment cost.

The release of an all new model provides the highest potential for major advancements achieved by the introduction of new technologies including those specifically related to vehicle efficiency and vehicle emissions reduction.

With the complexity of modern motor vehicles, development of an all new vehicle model is an extensive and expensive undertaking. Whilst the time to actually develop such a model has fallen in recent times assisted by the use modern Computer Aided Engineering (CAE) techniques, the minimum development time from the end of the initial concept phase, which itself can take up to 18 months, is unlikely to be less than 18 months and is more likely to be 24~30 months. At the point of development kick off, the automotive industry requires regulatory certainty with all market requirements clearly defined and fixed.

Typical automotive product sales cycles range between 5 and 10 years. This means that a completely new model that was introduced into the Australian market in 2016 is not likely to be replaced by another all new model of the same size and target customer group until at least 2021 and more likely closer to 2026. Conversely, a new model which is first conceived at the end of 2016 and takes into account known regulatory requirements at that time could not be ready for introduction to the market until at least the end of 2020. Automotive manufacturer's advanced product plans take such development and sales cycles into account.

In a highly competitive market environment with over 50 brands offering in excess of 650 models, manufacturers' long range product plans are highly confidential and carefully guarded. MMAL is unable to provide detailed information with respect to its strategic and product plans, cost and resourcing in a public submission as such knowledge may be used by its competitors to gain commercial competitive advantage. However, in recognition of the importance that government have a comprehensive understanding of the down-stream implications of fuel efficiency standards, MMAL offers to engage in confidential, one on one detailed discussions with regulators at which some of the more classified elements can be examined.

### **Recommendation**

- Government should engage extensively with FCAI and its individual members in order to have detailed discussions relating to the design and implementation of a vehicle efficiency regulation.
- Government should provide adequate lead time taking into account product design and development cycles and available OEM resources when considering vehicle efficiency (CO<sub>2</sub>) standards.

---

## Fuel Efficiency (CO<sub>2</sub>) Standards, Technology Focused Measures

---

The RIS suggests that there are many proven, cost effective and currently available technologies that could be employed to provide efficiency improvements such as reducing weight and adopting more efficient engines and drive trains. Table 2 contains information relating to the estimated CO<sub>2</sub> benefits and costs of certain technologies. The information is not inconsistent with that provided in **The King Review of low-carbon cars**<sup>1</sup>

In our 2008 submission to the Australian Transport Council (ATC) and Environment Protection and Heritage Council (EPHC) discussion paper entitled '*Vehicle Fuel Efficiency: Potential measures to encourage the uptake of more fuel efficiency, low carbon emission vehicles*', MMAL agreed that these technologies were feasible but that the benefits were overstated and, in some cases, could not be considered in isolation because they were co-related and inter-dependent.

The information contained in Table 2 has the benefit of global experience over the period since the King Review. MMAL must reiterate that the effectiveness of individual technologies must only be considered as a part of the overall vehicle efficiency package of which they form a part. They cannot be considered in isolation and their benefit cannot be seen as necessarily cumulative. Furthermore, MMAL believes that some of the CO<sub>2</sub> reduction potentials are overstated and the costs understated, in some cases quite significantly.

It is also evident that a number of the technologies contained in Table 2 have already been deployed into a sizeable proportion of the Australian new light vehicle fleet reducing the potential for them to contribute to a further improvement in the efficiency of the fleet.

In MMAL's case, technologies from Table 2 that are available in models offered in the Australian market include petrol multi-point fuel injection with dual overhead cam, variable valve timing and lift, down sized/ turbo charged diesel engine, multiple speed (including 8 speed) automatic transmissions, constantly variable transmission, dual clutch transmission, petrol dual motor full hybrid, electric power steering, electric coolant pump and mass reduction.

### Recommendation

- Government should take the technologies already deployed in the market place and the actual CO<sub>2</sub> reduction potential of new technologies into consideration when designing vehicle efficiency standards and setting targets for those standards.

---

<sup>1</sup> The King Review of low-carbon cars (2008)

[http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/d/bud08\\_king\\_1080.pdf](http://webarchive.nationalarchives.gov.uk/+http://www.hm-treasury.gov.uk/d/bud08_king_1080.pdf)



---

### Fuel Efficiency (CO2) Standards, Consumer Demand

---

The RIS suggests that manufacturers make choices of a range of vehicles from their global portfolios which maximize their profit in the Australian market whilst ignoring the potential for providing more efficient variants which sell into other right hand drive markets. Table 3 contains information relating to variants which sell into the Australian and United Kingdom market to support Government's opinion.

Specific to Mitsubishi Motors is the comparison of two Mitsubishi Motors ASX variants

Model	Best Australian Variant	Tailpipe CO <sub>2</sub> (g/km)	Best UK variant	Tailpipe CO <sub>2</sub> (g/km)	Difference
Mitsubishi ASX	2.2L Turbo Diesel 6 Spd Auto, 4WD	160	1.6L Turbo Diesel 6 Spd Manual, 2WD	119	26%

---

The comparison is simplistic at best and demonstrates a lack of understanding of the fundamentals of consumer demand in the two subject markets.

Mitsubishi Motors develops and produces a number of variants for each model with a range of engine and drive train options for the global market. The Australian consumer demonstrates a highly skewed preference for larger, more powerful engines and automatic transmissions even in smaller vehicles such as small or mid-sized SUVs.

When first released into the Australian market, ASX was offered with manual and automatic (CVT) transmission petrol engine variants and manual transmission diesel variants. Market uptake of the diesel variant was even lower than expected at 6% of ASX total volume dropping to 2% in the second year. Responding to market research, the decision was made to develop a larger capacity automatic transmission diesel variant specifically for the Australian market to sell alongside the existing petrol variants. This strategy was somewhat successful with the automatic variant achieving penetration in the range of 13-18% of ASX total volume over the following three years. An immediate and permanent reduction in the manual transmission diesel variant penetration was observed and this led to its withdrawal from the market within two years. With the recent reduction in global oil prices, the diesel automatic transmission variant penetration has dropped to approximately 5% of ASX total volume in 2016. In contrast, ASX is sold into the UK market in 4 variants, only one of which has a petrol engine. Manual transmission, diesel variants account for 35 % of the total ASX volume with automatic diesel accounting for another 24%, Manual transmission variants in general account for over 75% of total ASX volume. All variants except diesel automatic variants utilise smaller engines in the UK than are utilised in Australia.

Both research and actual sales results reinforce the fact that Australian consumers have different preferences to consumers in Europe and the United Kingdom. Mitsubishi Motors would offer small engine, manual transmission equipped variants of models sold in multiple markets if the Australia consumers would demand these features. The simple fact is that the Australian consumer values vehicle efficiency related technologies relatively lowly when considering the purchase of a new vehicle.

#### Recommendation

- Government should design vehicle efficiency standards to include complementary measures which encourage and/or incentivize the Australian consumer to increase their uptake of lower emission variants which could be offered by manufacturers.

---

## **Complementary measures, electric vehicles (EVs)**

---

MMC is a global leader in Electric Vehicles and EV technologies. MMC produced the world's first mass-produced Electric Vehicle, the i-MiEV. This unique and innovative model was introduced in Japan in 2009, Australia in 2011 and globally thereafter. MMC produced the world's first 4WD Plug In Hybrid Electric Vehicle (PHEV) Sports Utility Vehicle. The PHEV Outlander was introduced in Japan and Europe in 2013, Australia in 2014 and is being progressively released on a global basis according to market demands.

MMC has a goal of having 20% of its global vehicle production consist of plug in electric vehicles by 2020 contributing to a 50% efficiency improvement in its new vehicle fleet in the same period. In order to achieve this goal, MMC expects that a number of strategies will be required globally and regionally to improve the uptake of EVs in the market place.

These strategies include

- Having a stated government volume target for the economy
- Direct Incentives/subsidies for purchasers of EVs
- Concessional treatment in vehicle efficiency regulations
- Purchase of EVs by government departments
- Registration and 3rd party insurance reductions
- Import Duty reductions
- Goods and Services Tax (VAT or equivalent) reductions
- Removal or reduction of the Luxury Car Tax
- Planning and building regulations - Recharge points in new office and apartment buildings
- Traffic Management - access to travel in high occupancy lanes.
- Allocated parking spaces

It is important for Government to understand that critical to the success of these strategies is a fundamental shift in consumer demand for low emission vehicles, including EVs. The National Transport Commission (NTC) report into the "Carbon Dioxide Emissions Intensity for New Australian Light Vehicles 2015" notes that *"Consumer preferences are an important factor affecting the national average of carbon dioxide emissions intensity for new vehicles."* and *"Australian consumer preferences for heavier vehicles with larger and more powerful engines, for example, SUV Medium, SUV Large and SUV Upper Large segments made up 30% of all passenger vehicle sales in 2014."*

Source: [http://www.ntc.gov.au/Media/Reports/\(C19AD85F-32EC-4605-886F-8448F1CB00A2\).pdf](http://www.ntc.gov.au/Media/Reports/(C19AD85F-32EC-4605-886F-8448F1CB00A2).pdf)

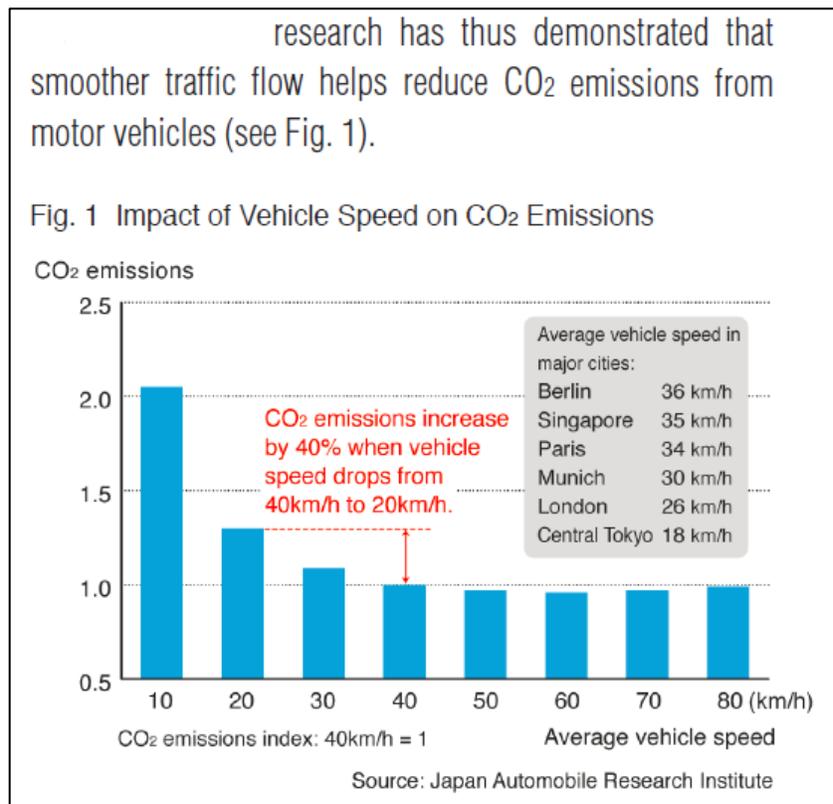
In overseas markets many of the strategies for increasing demand for EVs and Low Emission Vehicles in general have been time based and often, when strategies have been withdrawn or wound back, consumer preference has tended to revert to some degree. MMAL believes that any strategies should be based on the achievement of a set penetration level of the Low Emission Vehicle (or EV) rather than time based allowing permanent consumer preference change to be achieved.

### **Recommendation**

- Government should implement a number of strategies designed to increase the uptake of EVs in the Australian market which remain in place until a set percentage market penetration is achieved.

## Complementary measures, Information and Education

Continued research by the Japanese Automotive Research Institute (JARI) has found that improving traffic flows and reducing congestion will have a positive effect reducing vehicle emissions.



Source : 2016 Report on Environmental Protection Efforts  
[www.jama-english.jp/publications/env\\_prot\\_report\\_2016.pdf](http://www.jama-english.jp/publications/env_prot_report_2016.pdf)

Improvements in road traffic flow can be achieved by investment in road infrastructure and Intelligent Transport Systems which:-

- a) Interactively control traffic signals in real time
- b) Provide navigation systems with real time information on road traffic congestion
- c) Advise alternative route information.
- d) Collect data for future urban planning

Furthermore, driver behaviour is a significant contributor to efficient vehicle operation. Promotion of eco-driving tips are a proven effective method of improving fuel economy and reducing emissions.

**Ten Tips for Fuel-Conserving Ecodriving** (as promoted in Japan)

- 1. Accelerate gently.**  
Think "eco-start" when you accelerate—increasing your speed at a relaxed pace, to 20km/h in 5 seconds, boosts fuel efficiency by 10%. Gentle acceleration also contributes to safer driving.


- 2. Maintain a steady speed and keep your distance.**  
Maintain a suitably steady speed for safe and fuel-efficient driving. Tailgating leads to unnecessary acceleration/deceleration, resulting in 2% and 6% lower fuel efficiency in urban and suburban areas, respectively.


- 3. Slow down by releasing the accelerator.**  
Releasing the accelerator when recognizing the need to slow down (e.g., at changing traffic lights) stops the fuel supply, resulting in a 2% gain in fuel efficiency. Use your engine's braking function whenever appropriate, including on downhill descents.


- 4. Make appropriate use of your air conditioner.**  
The AC function is for cooling and dehumidifying only, so don't leave your AC on when you're heating the cabin. When you do use it, be sure not to set it too low. (Continuous use of the AC functioning at 25°C when the outdoor temperature is 25°C results in a fuel efficiency loss of 12%.)


- 5. Don't warm up or idle your engine.**  
Today's passenger cars don't require warming up, so start off slowly right after turning on the ignition. When waiting or loading/unloading, make a habit of turning your engine off instead of letting it idle. Ten minutes of engine idling (with the AC off) wastes 130cc of fuel. (See notes below.)


- 6. Plan your itinerary to avoid congested routes.**  
Plan the route to your destination using a map or your navigation system before starting off. Check traffic information to avoid congested areas and save time and fuel. Ten minutes of unnecessary driving in a one-hour trip results in a 17% drop in fuel efficiency.


- 7. Check your tire pressure regularly.**  
Driving on tires whose air pressure is 50kPa (0.5kg/cm<sup>2</sup>) lower than it should be decreases fuel efficiency by 2% in urban areas and 4% in suburban areas. Timely replacement of engine oil and items such as oil filters and air cleaner elements also contributes to increased fuel efficiency.


- 8. Reduce your load.**  
Onboard weight is a key factor in fuel efficiency performance. Driving with 100kg of unnecessary onboard weight causes a 3% loss in fuel efficiency. Another factor is your vehicle's aerodynamic drag, which you can reduce by removing exterior rack equipment when not in use.


- 9. Respect parking rules and regulations.**  
Don't leave your vehicle where it blocks traffic. Illegal or imprudent on-street parking causes traffic congestion which leads to increased emissions and a greater risk of accident. Roads that are not encumbered by illegally or improperly parked vehicles promote smoother traffic flow and higher fuel efficiency.


- 10. Check the readings on your fuel efficiency-monitoring equipment.**  
Be aware of your vehicle's fuel efficiency performance by consulting onboard equipment that monitors it.



Notes: 1. Warming up a vehicle engine is necessary only in extremely cold climates (-20°C or colder) or after long periods of non-use. 2. For drivers stopping engine idling manually, i.e. by turning their vehicle's ignition off and then back on again, caution is advised as follows (but does not apply to drivers of vehicles equipped with idling-prevention systems): 1) Stepping on the brake pedal repeatedly during engine shut-down may diminish braking power; 2) Drivers not accustomed to shutting down their engines and starting them up again may experience slow or faulty starts; 3) Excessive shutting down and re-starting may drain the batteries, resulting in engine start-up failure; 4) Do not use this method when stopped at the head of a line or on a gradient, because turn signals and windshield wipers, as well as airbags and other safety features, will not function during engine shut-down.

Source : 2016 Report on Environmental Protection Efforts

[www.jama-english.jp/publications/env\\_prot\\_report\\_2016.pdf](http://www.jama-english.jp/publications/env_prot_report_2016.pdf)

### Recommendation

- Government should invest in improved infrastructure, driver education and Intelligent Transport Systems to improve traffic flow and reduce traffic congestion.